

PROJECT ADMINISTRATION DATA SHEET☒ ORIGINAL ☐ REVISION NO. \_\_\_\_\_Project No. A-3232DATE 4/30/82Project Director: James Burson~~XXXXXX~~ School/Lab EDL/SHSSponsor: Health Examinetics, Inc.Type Agreement: P. O. #041682-BHMAward Period: From 6/20/82 To 7/30/82 (Performance) 7/30/82 (Reports)Sponsor Amount: \$4,500

Contracted through:

Cost Sharing: \_\_\_\_\_ GTRI/~~GM~~Title: Quantitative - Mask Fit TestingADMINISTRATIVE DATAOCA Contact Faith G. Costello

## 1) Sponsor Technical Contact:

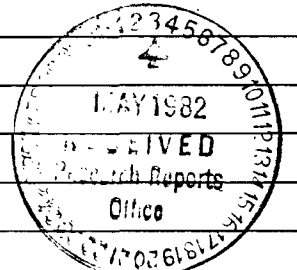
## 2) Sponsor Admin/Contractual Matters:

\* Dr. Michael Putman  
Health Examinetics, Inc.  
1424 Murdock Rd.  
Marietta, GA 30062

Bruce H. Meyer  
Marketing Director  
Health Examinetics, Inc.  
1424 Murdock Rd.  
Marietta, GA 30062

973-2655Defense Priority Rating: NASecurity Classification: NARESTRICTIONSSee Attached NA Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval - Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of \$500 or 125% of approved proposal budget category.

Equipment: Title vests with sponsor; however, none proposedCOMMENTS:COPIES TO: RAN~~XXXXXXXXXXXXXXXXXX~~

Research Property Management

Accounting

Procurement/EES Supply Services

FORM OCA 4:781

Research Security Services

Reports Coordinator (OCA)

Legal Services (OCA)

Library

EES Public Relations (2)

Computer Input

Project File

Other \_\_\_\_\_

SPONSORED PROJECT TERMINATION SHEETDate 9/22/82

Project Title: Quantitative - Mask Fit Testing

Project No: A-3232

Project Director: James Burson

Sponsor: Health Examintetics, Inc.

Effective Termination Date: 7/30/82Clearance of Accounting Charges: 7/30/82

Grant/Contract Closeout Actions Remaining:

- ☒ Final Invoice ~~and Closing Documents~~
- ☐ Final Fiscal Report
- ☐ Final Report of Inventions
- ☐ Govt. Property Inventory & Related Certificate
- ☐ Classified Material Certificate
- ☐ Other \_\_\_\_\_

Assigned to: EDL/SHS (School/Laboratory)COPIES TO:

Administrative Coordinator  
Research Property Management  
Accounting  
Procurement/EES Supply Services

Research Security Services  
Reports Coordinator (OCA)  
Legal Services (OCA)  
Library

EES Public Relations (2)  
Computer Input  
Project File  
Other \_\_\_\_\_



ENGINEERING EXPERIMENT STATION  
**Georgia Institute of Technology**  
A Unit of the University System of Georgia  
Atlanta, Georgia 30332

July 19, 1982

Mr. Bruce H. Meyer  
Health Examinetics, Inc.  
1424 Murdock Road  
Marietta, Georgia 30062

Dear Mr. Meyer:

Quantitative respirator fit-testing was performed at the Daniel Construction Company - Monsanto Project in Decatur, Alabama on July 7-10, 1982 and July 12-14, 1982 by Mr. Paul J. Middendorf, using the National Draeger, Inc., Mask Fit Tester, canopy type for dual cartridge respirators. The procedure used was that recommended by National Draeger, Inc., and is included as Attachment #1. The test gas contained nominally 1% ethylene in air. The analyzed concentration of ethylene for fit tests conducted on July 7-13 was 0.987%. The test gas for the fit tests conducted on the afternoon of July 13 and on July 14, 1982 was 1.0%. Protection factors (PF) were calculated using the following formula:

$$PF = \frac{C_o}{C_i} \quad \text{where } C_o = \begin{array}{l} \text{the concentration of ethylene in the test gas,} \\ \text{and} \end{array}$$
$$C_i = \begin{array}{l} \text{the concentration of ethylene in the mask} \\ \text{when worn} \end{array}$$

A list of the protection factors and the make and size of respirator fit for each employee is included as Attachment #2. Ambient levels of ethylene were monitored daily to ensure that the source of ethylene in the respirator was from leakage around the respirator rather than from ethylene which had escaped from the hood during previous tests. Ethylene was non-detectable in all ambient air samples taken.

Several items which should be noted and of which the Daniel Construction Company should be made aware are listed below:

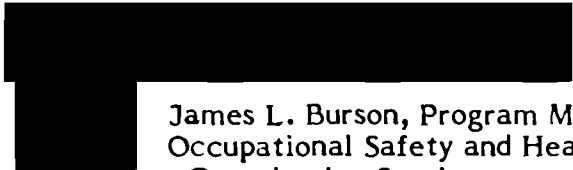
1. Fit testing is done under close to ideal conditions. The respirators used for fit-testing are new and are adjusted so that an acceptable fit is achieved. The employee is not performing his normal work movements which could cause additional leakage around the respirator seal.

Mr. Bruce H. Meyer  
July 19, 1982  
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2. To ensure that employees receive the maximum benefit of wearing a respirator, annual training in the use, limitations, and field-fitting of respirators should be provided.
3. Many Daniel Construction Company employees had mustaches which entered the sealing surface of the respirator. These employees were required to shave off a portion of the mustache so that the sealing surface was not interrupted and fit-testing could be done. Many of the employees will most likely grow the mustache back in the days to come. To ensure that the actual protection factor of a respirator remains close to the protection factor calculated during the fit-test, employees should not be permitted to wear a respirator when the seal is interrupted by facial hair. Employees should be required to shave off that portion of facial hair which breaks the seal. All facial hair which contacts the sealing surface should be shaved within 24 hours of wearing a respirator.
4. Although protection factors greater than 10 are reported, no half-mask respirator can be used by an employee in an area where the concentrations and time of exposure to a hazardous chemical or other agent would result in an employee exposure (disregarding the effect of the respirator) greater than 10 times the permissible exposure level.

The staff of the Daniel Construction Company - Monsanto Project was most helpful and courteous in every way possible. Special thanks go to Mr. Hillard Reeves, Safety Director, for his coordination of the project and assistance in handling the minor problems which were encountered.

Sincerely,

  
James L. Burson, Program Manager  
Occupational Safety and Health  
Consultation Service

JLB:sek

Attachments

NATIONAL DRAEGER QUANTITATIVE MASK FIT TEST APPARATUS  
CANOPY TYPE - MODEL R9000

Instructions For Use:

Prior to testing the following must be checked:

1. Perform leak test on bellows pump.
2. Volume calibration of bellows pump:  $V = 100 \text{ (cm}^3\text{)} \pm 5 \text{ (cm}^3\text{)}$
3. Expiration date of detector tubes
4. Check all components of canopy assembly to make sure they are in good condition.

Assembly of Apparatus to Test Subject

- 1.1 Fit Collar Assembly over the test subject's head. Make sure the neck assembly, (rubber or plastic), is fitted securely. It is most important that a gas tight seal is achieved at the neck area.
- 1.2 Have the test subject don the mask, according to the mask instructions for use.
- 1.3 Remove the exhalation valve cover from the mask and connect the exhalation connecting bag to the exhalation port of the collar and also to the exhalation valve of the mask. Note: It is important that the diameter of the opening of the connector is smaller than the diameter of the exhalation valve of the mask, adjust if necessary.
- 1.4 Connect right and left inhalation bags to the cartridges of the mask, making sure a good seal is achieved on the outside rim of the cartridge. Then, connect the tubes at the opposite end of the inhalation bags to the inhalation posts of the collar, firmly.
- 1.5 Open the canopy and place over the test subject's head. Care must be taken to prevent interfering with the components already connected. Starting at the back of the canopy fit the sealing edge of the frame to the sealing edge of the canopy. Carefully pull forward, snapping the sealing edges together on the right and left sides. Then snap the front edges together and follow the entire sealed edge of the canopy to ensure a gas tight connection.
- 1.6 Connect the exhalation sample bag to the outside center post firmly, and have the test subject do two full respirations. The exhalation sample bag should fill on exhalation and the test subject should experience no remarkable inhalation or exhalation resistance.
- 1.7 Connect the outlet of the test gas regulator to the inlet of the flow meter.

- 1.8 Turn on test gas cylinder and adjust the outlet pressure to 20 p.s.i.
- 1.9 Connect the gas inlet hose of the test apparatus collar frame to the outlet of the flow meter.
- 1.10 Set the flow meter to 8.0 L/min.
- 1.11 Break off the tips of the Draeger ethylene tube and insert firmly into the bellows pump.
- 1.12 After 2 minutes of pre-flushing, insert the detector tube into the sampling port of the exhalation sample bag and execute three strokes of the bellows. The 8.0 L/min. flow rate must be maintained for the duration of the test.
- 1.13 After the completion of the third stroke of the pump, pull out the detector tube and record the measurement immediately. The measurement of ethylene gas is the furthest discoloration of light blue on the scale.
- 1.14 Turn off the test gas and carefully disassemble the components.

The Protection Factor of the mask wearer results from the relationship:

$$\text{Protection Factor} = \frac{\text{Test Gas Exposure}}{\text{Measured Value in the Expired Air}}$$

\* Example:  $\text{PF} = \frac{1\% (10,000 \text{ ppm})}{100 \text{ ppm}}$   
 $\text{PF} = 100$

Testing must be performed in a well ventilated area, especially to prevent test subject's exposure to ethylene from a previous test.

\*A test gas mixture of 1.0% (10,000 ppm) Ethylene in Air, must be purchased from a specialty gas supplier. It is important that the actual concentration of Ethylene in ppm is known on the Supplier's test report of the gas mixture for accurate testing.

DATE	SS #	NAME	JOB TITLE	MASK (TYPE & SIZE)	PF
7/7/82	416-48-2552	O. Stevenson	Cement Finisher	Survivair M	110
7/7/82	421-50-3038	P. Perkins	Carpenter	Survivair M and L	<10
7/7/82	417-96-7317	E. Lawrence	Carpenter	Survivair M	20
7/7/82	423-58-6299	Donnie Dickey	Pipe Fitter	Survivair M	28
7/7/82	422-52-4166	L. Parham	Carpenter's Helper	Survivair M	22
7/7/82	421-34-0190	W. Spangler	Laborer	Survivair M	329
7/7/82	419-42-3005	J. Coffey	Brick Mason	Survivair M	56
7/7/82	418-48-7780	J. Hill		Survivair M	39
7/7/82	318-30-3275	Carmon Harville	Field Engineer	Survivair M	1000
7/7/82	423-64-1870	T. King	Laborer	Survivair M	132
7/7/82	422-40-6040	S. Troupe	Laborer	Survivair M	79
7/7/82	422-20-7529	W. Robinson	Laborer	Survivair M	33
7/7/82	423-42-8897	R. Mayes	Laborer	Survivair M	25
7/7/82	423-24-2214	W. C. Keenum	Iron Worker Foreman	Retest Survivair M did not fit	-
7/7/82	423-42-7509	J. T. Tidwell	Iron Worker	Survivair M	56
7/7/82	424-54-0865	H. Posey	Iron Worker	Survivair M	247
7/7/82	421-82-3522	W. Lovett	Iron Worker	Survivair M	99
7/7/82	424-06-8794	Johnny Tidwell	Iron Worker	Survivair M	56
7/7/82	422-36-8462	S. Hardin	Iron Worker	Survivair M	33

DATE	SS #	NAME	JOB TITLE	MASK TYPE & (SIZE)	PF
7/7/82	374-48-4312	R. Letson	Iron Worker	Survivair M	56
7/7/82	429-76-9568	Carter Thompson	Iron Worker Foreman	Survivair M	247
7/7/82	420-56-8588	B. Cottingham	Mechanic	Survivair M	395
7/7/82	422-36-9543	S. Eckstein	Operator	Survivair M	22
7/7/82	421-74-8523	J. Lipscomb	Iron Worker	Survivair M	28
7/7/82	421-46-6569	J. Terry	Crane Operator	Survivair M	79
7/7/82	418-28-6723	H. Sanderson	Painter	Survivair M	56
7/7/82	417-56-0184	S. Jones	Operator	Survivair L	990
7/7/82	421-48-5827	H. J. Robison	Painter	Survivair M	247
7/8/82	418-44-9277	L. F. Nolen	Painter/Sand Blaster	Survivair M	28
7/8/82	422-64-9189	T. R. Terry	Painter	Survivair M	494
7/8/82	416-16-9939	H. Lyle	Painter	Survivair M	987
7/8/82	422-66-9564	A. J. Ashford	Painter/Sand Blaster Helper	Survivair M	494
7/8/82	413-58-4271	Barbara King	Pipe Fitter	Survivair M	247
7/8/82	383-34-0718	David Vickery	Millwright	Survivair M	247
7/8/82	420-70-7926	Anthony Blackwood	Millwright	Survivair M	110
7/8/82	418-40-3867	W. Smith	Millwright	Survivair M	247
7/8/82	419-42-3906	L. Stewart	Millwright	Survivair M	329
		B. E. Landers		qual - Survivair M & S leak around nose	-



DATE	SS #	NAME	JOB TITLE	MASK TYPE & SIZE)	PF
7/8/82	422-20-9553	B. C. Vickery	Millwright	Survivair L	132
7/8/82	409-88-9397	S. Smith	Millwright	Survivair M	110
7/8/82	416-46-7975	Lyle Green	Pipe Foreman	Survivair M	39
7/8/82	418-30-7572	R. Rice	Welder	Survivair M	110
7/8/82	421-76-2111	T. Willingham	Welder	Survivair M	132
7/8/82	408-60-5202	H. R. Narmore	Pipe Fitter	Survivair M	39
7/8/82	426-70-6028	Tex Russell	Pipe Fitter	Survivair M	39
7/8/82	560-74-3492	R. Bodine	Pipe Fitter	Survivair L	247
7/8/82	419-86-7696	Jeff Albright	Pipe Fitter	Survivair L	56
7/8/82	266-44-7539	E. White	Pipe Fitter	Survivair M	99
7/8/82	228-60-0194	A. C. Sheeks, Jr.	Pipe Fitter	Survivair L	132
7/8/82	421-64-2565	R. Thrasher	Pipe Fitter	Survivair S & M	<u>1100 ppm</u> PF=9
7/8/82	287-34-2057	Marcell Stephens	Pipe Fitter Foreman	Survivair M	99
7/8/82	421-64-4909	J. R. Garrie	Pipe Welder	Survivair M	49
7/8/82	424-76-6664	R. Pierce		Survivair M	-
7/8/82	287-34-0517	H. Evans	Pipe Welder	Survivair M	49
7/9/82	421-48-8326	J. Potts	Pipe Welder	Survivair L	1000
7/9/82	424-34-9982	W. Farmer		Survivair M & L	Did not pass qual.
7/9/82	421-54-4526	W. Newton	Pipe Fitter	Survivair M	987

DATE	SS #	NAME	JOB TITLE	MASK (TYPE & SIZE)	PF
7/9/82	421-58-9927	W. Keenum	Pipe Fitter	Survivair M	66
7/9/82	250-56-1220	Joe Cothran	Pipe Fitter	Survivair M	329
7/9/82	422-86-7747	T. Smith	Pipe Fitter	MSA Comfo II M	132
7/9/82	419-80-0369	L. Burden	Pipe Helper	Survivair M	110
7/9/82	423-42-8839	Bill Curnutt	Pipe Welder	Survivair M	16
7/9/82	263-58-1722	B. Heard	Pipe Helper	Survivair M	132
7/9/82	416-46-3968	R. Lynch	Pipe Helper	Survivair L	197
7/9/82	419-60-9950	C. Lott	Insulator	Survivair L	22
7/9/82	250-52-3046	Jimmy Garrett	Insulator	Survivair M	165
7/9/82	421-54-3071	B. Dumas	Insulator	Survivair M	132
7/9/82	418-48-8313	J. Hill	Insulator	Survivair M	99
7/9/82	420-56-8645	James Rice	Sheet Metal Foreman	Survivair M	165
7/9/82	411-72-8919	B. Jones	Sheet Metal	Survivair M	197
7/9/82	418-50-6393	G. Anderson	Sheet Metal	Survivair M	123
7/9/82	420-42-3158	J. D. McIntyre	Sheet Metal	MSA Comfo II M	56
7/9/82	330-42-2962	J. Jackson	Sheet Metal	Survivair M	329
7/9/82	250-26-4233	R. Floyd	Sheet Metal	Survivair M	28
7/9/82	421-46-5033	D. Warren	Sheet Metal	Survivair M	197
7/9/82	418-72-8181	R. Hampton	Sheet Metal	Survivair M	247

DATE	SS #	NAME	JOB TITLE	MASK (TYPE & SIZE)	PF
7/9/82	587-27-0932	B. Laney	Sheet Metal	Survivair M	329
7/9/82	417-90-9020	J. King	Sheet Metal	Survivair M	99
7/9/82	423-80-3803	Keith Barbrey	Sheet Metal	MSA Comfo II M	66
7/9/82	424-76-7078	D. Burden	Sheet Metal	Survivair L	56
7/9/82	424-34-9982	W. Farmer	Pipe Fitter	MSA Comfo II M	56
7/9/82	424-76-6664	R. Pierce	Pipe Fitter	MSA Comfo II M	110
7/9/82	421-64-2565	R. P. Thrasher	Pipe Fitter	MSA Comfo II M	99
7/9/82	421-50-3030	P. Perkins	Carpenter	Survivair L	165
7/9/82	418-30-6545	B. E. Landers	Millwright	MSA Comfo II M	247
7/9/82	423-24-2214	W. C. Keenum		MSA Comfo II M	132
7/12/82	263-40-5262	J. Cain	Welder	Survivair L	56
7/12/82	412-60-3432	H. Jones	Sheet Metal Mechanic	Survivair M	22
7/12/82	422-64-9418	C. Terry	Sheet Metal	Survivair M	247
7/12/82	418-18-0849	H. Sparkman	Welder	Survivair M	197
7/12/82	418-58-2813	K. York	Sheet Metal Mechanic	MSA Comfo II M	56
7/12/82	418-80-7731	G. Denton	Sheet Metal Mechanic	Survivair L	329
7/12/82	423-94-7720	M. Lowery	Sheet Metal Helper	Survivair S	329
7/12/82	419-98-5193	M. Hankins	Sheet Metal Helper	Survivair M	494
7/12/82	420-78-6376	S. Sanderson	Sheet Metal Helper	Survivair M	345

DATE	SS #	NAM	JOB TITLE	MASK TYPE & SIZE)	PF
7/12/82	424-76-9567	R. Willingham	Sheet Metal Helper	Survivair M	329
7/12/82	422-56-8033	Bobby Pack	Sheet Metal Foreman	Survivair M	110
7/12/82	424-76-8038	R. Vest	Pipe Fitter	Survivair M	247
7/12/82	419-12-5113	G. Kilgo	Sheet Metal Mechanic	MSA Comfo II M	99
7/12/82	261-42-9294	M. Burks	Sheet Metal Mechanic	MSA Comfo II M	22
7/12/82	417-60-4610	J. Hovis	Sheet Metal Welder	Survivair M	197
7/12/82	421-78-3226	J. Parrish	Sheet Metal Welder	Survivair M	165
7/12/82	424-60-3091	F. Watkins	Electrician Helper	Survivair M	110
7/12/82	421-76-2298	R. Blackwood	Sheet Metal Welder	Survivair M	132
7/12/82	423-42-3981	J. Cottingham	Sheet Metal Mechanic	Survivair M	132
7/12/82	417-84-0913	S. Smith	Sheet Metal Helper	Survivair M	165
7/12/82	416-74-6109	C. Mote	Electrician Foreman	Survivair M	197
7/12/82	412-62-0465	Gene Franklin	Electrician Foreman	Survivair M	123
7/12/82	423-42-9363	C. Echols	Instruments	Survivair M	165
7/12/82	423-62-4012	T. Vinson	Instruments	Survivair M	197
7/12/82	412-88-2723	H. McDonald	Instruments	Survivair M	247
7/12/82	417-84-1026	R. Garner	Instruments	Survivair M	494
7/12/82	418-44-6487	N. Herring	Instruments	Survivair M	987
7/12/82	419-60-8414	J. Engle	Electrician	Survivair M	132

DATE	SS #	NAM	JOI TITLE	MASK (TYPE & SIZE)	PF
7/12/82	424-76-6326	C. Fairbanks	Electrician	Survivair M	110
7/12/82	262-71-7630	R. Hurd	Electrician's Helper	Survivair M	197
7/13/82	419-80-2198	L. Johnson	Electrician	Survivair M	123
7/13/82	421-72-3808	H. Rice	Electrician	Survivair M	247
7/13/82	420-76-4609	J. Cameron	Electrician	MSA Comfo II M	123
7/13/82	259-98-1004	R. McIntyre	Electrician	MSA Comfo II M	165
7/13/82	571-50-7219	J. P. Smith	N. Alabama Insul.	MSA Comfo II M	132
7/13/82	417-64-9397	P. Rowe	Electrician	Survivair M	33
7/13/82	424-78-5738	W. Lindley	Electrician	Survivair M	111
7/13/82	423-58-5845	F. Whitehead	Electrician	Survivair M	125
7/13/82	418-68-5060	J. Pinkerton	Electrician	Survivair L	1000
7/14/82	420-76-4748	C. Smith	Electrician's Helper	Survivair M	250
7/14/82	415-74-8340	J. Robinson	Electrician's Helper	MSA Comfo II M	167
7/14/82	416-44-4399	L. Webb	Electrician	Survivair M	133
7/14/82	416-44-4152	W. Norton	Electrician	MSA Comfo II M	111
7/14/82	418-70-9185	T. Slaten	Electrician	Survivair M	100
7/14/82	415-30-3286	J. V. Britnell	No. Ala. Insul.	MSA Comfo II M	66
7/14/82	420-88-4641	S. L. White	No. Ala. Insul.	MSA Comfo II M	111
7/14/82	422-20-4618	A. McDonald	No. Ala. Insul.	MSA Comfo II M	57

DATE	SS #	NAM	JOB TITLE	MASK (TYPE & SIZE)	PF
7/14/82	423-62-4280	D. W. Hutto	No. Ala. Insul.	MSA Comfo II M	111
7/14/82	418-58-3606	D. McKay	Instrumentation	Survivair M	22
7/14/82	418-62-0363	J. Landers	Instrumentation	Survivair L	250
7/14/82	424-76-8670	P. Dumas	No. Ala. Insul.	MSA Comfo II M	40
7/14/82	423-58-8049	R. W. Alexander	No. Ala. Insul.	MSA Comfo II M	50
7/14/82	420-70-9495	B. G. Ryan	No. Ala. Insul.	MSA Comfo II M	125
7/14/82	424-34-4263	L. McKay	Instrumentation	Survivair M	100
7/14/82	416-56-5093	B. R. Melson	No. Ala. Insul.	MSA Comfo II M	125
7/14/82	420-52-8947	A. Waller	Instrumentation	Survivair M	25
7/14/82	244-50-1854	Ben Horne	Electrician Foreman	Survivair M	167
7/14/82	417-90-3060	G. Watkins	Electrician's Helper	Survivair M	11
7/14/82	360-52-6861	J. Tapley	Electrician's Helper	MSA Comfo II M	80
7/14/82	423-42-3803	H. Blankenship	Sheet Metal Welder	Survivair M	91
7/14/82	264-88-7012	G. Hampton	Electrician's Helper	Survivair M	125
7/14/82	420-38-9273	O. Dugger	Pipe Fitter	Survivair M	200
7/14/82	418-94-0975	M. Denton	Electrician's Helper	Survivair M	250
7/14/82	420-92-9894	J. Grantland	Electrician's Helper	Survivair M	80
7/14/82	421-82-3898	R. McIntyre	Electrician	MSA Comfo II M	80
7/14/82	416-44-0181	B. Latham	Electrician's Helper	Survivair M	250

